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1. INTRODUCTION

Recent research in low income countries has shown high transactions costs for both lenders and borrowers in diverse rural financial markets (Adams and Nehman, Inter-American Development Bank, Nyanin, Pokharel, and Z. Ahmed). These costs are higher than those found in financial intermediaries serving other sectors, in part because of the dispersed nature of agriculture. In the following discussion we argue that transactions costs are elevated because rural financial markets are performing poorly. We go on to argue that carefully measured transactions costs are a barometer of the overall efficiency of the financial system and are also proxies for how financial markets affect income and asset distributions. We use data collected in two regions of Sudan to illustrate our arguments.

2. Background on Agricultural Credit in Sudan

The Sudan is a large country that heavily depends on agriculture for earning foreign exchange (95%), providing a major part of its gross national product (40%), employing a majority of its population (70%), feeding its inhabitants, and supplying raw materials for its industries.[1] The public sector is directly involved in a large part of irrigated

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[1] The Democratic Republic of Sudan, Ministry of Finance and Economic Planning (MFEP), Third Three-Year Public Investment Programme 1982/83 - 1984/85, Khartoum: MFEP, 1982.

agriculture through ten public agricultural corporations (PACs). They are involved in a total gross area of more than 1.6 million irrigated hectares. PACs have absolute control over the production of cotton, castor oil, sugar cane, and wheat; and a good deal of control over sesame, ground nuts, gum Arabic, and sorghum. This control includes investment, pricing, management, production, and marketing.

The government also influences both public and private agricultural activities through credit programs. The Bank of Sudan (Central Bank) and the Ministry of Finance and Economic Planning fund the public agricultural corporations, while the Agricultural Bank of the Sudan (ABS), some commercial banks, and other financial institutions provide credit for private producers (Ahmed Humeida 1983).

Table 1 shows the loans granted by the Bank of Sudan and the repayment performance of nine PACs for the 1980/81, 1981/82, and 1982/83 seasons. As can be noted, defaults on PAC loans were about 50% in each of these seasons. In July 1983 the total outstanding loans to these corporations was about US$ 111 million; 56% of the Central Bank's total advances. The sharp drop in the real value of loans to PACs over this period is also noteworthy in the Table.

Nationalized commercial banks, the Cooperative Development Bank, the Sudanese Saving Bank, and a recently established Islamic Bank make a few loans to farmers, but concentrate mostly on import-export trade where the profit is quick and sure. Although frowned upon officially, informal "sheil" merchants continue to be the primary sources of loans for most rural people (Awad 1973; and Ahmed Humeida 1975). The sheil system is

TABLE 1. NEW LOANS TO NINE PUBLIC AGRICULTURAL CORPORATIONS BY BANK OF SUDAN 1980/81 - 1982/83

	YEARS		
	1980/81	1981/82	1982/83
Bank Loans (million US$)	131.4	84.8	76.7
Loan Repayment (million US$)	63.9	42.8	44.9
Loan Repayment (%)	48	50	59

Source: Bank of Sudan, Current Accounts Department, unpublished information.

based on borrowing grains or inputs from merchants and repaying, often in kind, at harvest (S. Ahmed, and Wilmington).

The Agricultural Bank of Sudan (ABS) was established in 1958 and currently has 24 branches and a paid-up capital of US$ 12.5 million. It has been the primary source of formal agricultural credit to private producers in the country for the past three decades, but only three of its branches accept deposits. In addition to private producers, it provides loans to agricultural cooperatives, farmers' unions, and to individual farmers in government and semi-government agricultural schemes who can offer satisfactory collateral. As can be noted in Table 2, the ABS is also facing serious loan recovery problems. Up to December 1984 the amount of loans in arrears was more than 36% of the total loan balances. This amount increases to more than 50% in some regions and to more than 90% in some branches. The aging-of-arrears information in Table 2 shows that loan defaults have been a chronic problem for ABS.

The ABS has had an erratic pattern in the nominal value of its new agricultural loans. In real terms, the value of new loans made by ABS has dropped sharply since 1975 to less than US$ 50 million in 1984. Also, the ABS has increasingly directed its funds into short-term credits (80% of the total volume of loans), and to trade activities (50% of its loans). With its limited resources, the bank was not able to cover more than 10% of its potential private borrowers. The Bank's capital is deteriorating due to the persistent problems in recovering loans, and capital erosion due to inflation. The problem of loan recovery has worsened the past several years due to adverse weather, civil war, and the economic stress that farmers in the Sudan have experienced.

TABLE 2. AGRICULTURAL BANK OF SUDAN, LOANS OUTSTANDING, AMOUNT IN ARREARS AND AGING-OF-ARREARS, DECEMBER 31, 1984

Regions	Total Outstanding Loan	Amount in Arrears	Aging-of-Arrears by No. of Years			
			0-1	1-3	3-5	5+
	Million US$		%			
North and East	11.6	2.1	31	10	36	23
Central	18.9	5.6	23	40	9	28
West and South	17.9	9.7	16	39	32	13
Total	48.3	17.4	20	36	25	19

Source: Checchi and Company, unpublished Consultant Team Report prepared for the Agricultural Bank of Sudan, Khartoum, Sudan, 1985.

By most measures the ABS is having a difficult time supporting agricultural development. The ABS's poor performance is shown in its erratic supply of new agricultural loans, by its weak loan recovery, and by the shortening of the term structure of its loans. Because the ABS mobilizes few savings deposits, its flow of loanable funds is dependent on loan recoveries and on irregular insertions of external funds from the government and from donors. The substantial costs incurred by both the bank and its borrowers are proxy measures of ABS's weak support of agricultural development.

Information on these transaction costs were collected during the latter part of 1979 through field interviews in two regions of Sudan, representing dry and traditional farming, and irrigated and modern agriculture. Branch offices of the ABS were located in each of these areas: the Drilling Branches and the Wad Medani. Estimates of ABS's costs are based on information drawn from these two branches, plus information provided by the head office in Khartoum. Data on borrower's costs of acquiring loans came from interviews with 60 farmers who had obtained loans from ABS in the two areas. From these borrowers, representative case studies were done clarifying the steps farmers must take to acquire loans. Because of the standard procedures used by the ABS in making loans, these case studies are quite representative of what most farmers face in doing business with the ABS (see Ahmed 1980 for more details on this study).

3. BORROWING COSTS

Until recently, researchers and policymakers paid little attention to non-interest costs of borrowing. Recent research has shown these costs can be relatively large, especially for customers who are non-preferred: new

borrowers, borrowers with weak collateral, borrowers who want relatively small loans, and individuals who have unstable incomes. Several authors have concluded that interest rate controls, other government regulations, and donor reporting requirements affect the magnitude and allocation of these costs among participants in financial markets (Cuevas and Graham, Gonzalez-Vega, and Ladman). It has also been argued that concessionary interest rates and other regulations encourage intermediaries to transfer some of their normal loan transaction costs to non-preferred borrowers as a way of rationing cheap credit.

Table 3 shows the various steps that a typical borrower from the Wad Medani Branch of the ABS took in getting a medium-term, medium-sized loan at the concessionary rate of 9 percent per year. The case-study farmer lives about 60 miles from the branch office, borrowed the equivalent of US$ 3,552 for four years to buy and install a water pump, to establish an orchard, and to produce a small amount of fodder crop. He repaid his loan on time. His total loan transaction cost amounted to about US$ 500, equal to about two-thirds of his total interest payment. Almost 70 percent of the farmer's transactions costs were due to transportation expenses, and his opportunity cost of 15 days spent processing the loan and providing secure collateral for the lender. On an annual basis his total effective costs of borrowing amounted to 16 percent.

Using information gathered from other farmers it was possible to construct estimates of the transaction costs for borrowers with other characteristics. Table 4 summarizes this information for three sizes of loans (small, medium, and large), and for two types of borrowers (new and experienced borrowers). To simplify the analysis we focus only on loans

TABLE 3. STEPS IN BORROWING A MEDIUM-SIZED LOAN FROM THE WAD MEDANI BRANCH OF THE AGRICULTURAL BANK OF SUDAN, 1979

Requirements	Authority Involved
Application form	The Wad Medani Branch of the ABS
Search certificate	Local authority at capital city
Certificate estimating the value of the collateral	Private architect
Water pump performance invoice	Private dealer
Cost estimation to establish an orchard	Horticultural department at capital city
Cost estimation on building for a water pump	Private architect
Sketch map of the site	Private civil engineer
Rental contract	Local authority at capital city
Registration of the collateral	Local authority at capital city
An approval to withdraw water from the Blue Nile	Ministry of Irrigation at capital city
Income certificate	Prepared by client with the help of a loan officer
Agricultural report	Written by branch agriculturalist after visiting the site
Summary of loan application	Prepared by loan officer
Insurance of water pump for 4 years	Private insurance company
Stamps and stamp duties	Post Office
Collateral redemption	Local authority at capital city
Cost of transportation to excute or follow up above items	(Twenty trips)
Meals and miscellaneous expenses	
Cost of one trip to Khartoum	Loan authorization of headquarters
Two trips to get the loans and four to repay	

Source: Survey results from interviews in Wad Medani, 1979.

with a duration of four years. All borrowers paid 9 percent interest on their loans. As can be noted in the Table, new borrowers incurred more transactions costs per unit of money obtained, and thus the effective borrowing rate varied directly with the loan size. Experienced borrowers with large loans paid an effective borrowing rate of 12 percent for their loans, while inexperienced small borrowers paid 30 percent. Since many of the initial costs of getting loans from the ABS are fixed, regardless of size or term, new borrowers wanting small loans for only one cropping season incur effective borrowing costs that are much higher than the 30 percent shown in Table 4. Their rates are similar to the so called exorbitant rates charged by informal lenders.

The substantial initial transactions costs incurred by borrowers also help clarify why farmers have incentives to postpone repaying their loans. Since ABS applies very low penalty interest against those who repay loans late, borrowers who postpone their repayment for several years are able to lower their annual effective borrowing costs for the loan. The information in Table 5 summarizes estimates of the effective borrowing cost rates for those who repay their loans on time, those who postpone repaying for a year, for two years, and for three years. As can be noted, medium-sized and new borrowers can reduce their effective borrowing costs from 16% per year to 12% per year by repaying the loan three years late.

While far from being the only reason for late loan repayment, spreading the borrower's loan transactions costs over a longer period of time than is specified in the loan contract is clearly an important way for borrowers to offset high loan transaction costs. It is especially rational behavior if borrowers are uncertain about their ability to get new loans in the near

TABLE 4. COSTS OF BORROWING FOR DIFFERENT TYPES OF INDIVIDUALS

Type of Borrower	Size of Loan in US$	Interest Paid to the ABS US$	Total Trans-action Cost US$	Total Borrowing Cost US$	Effective Borrowing Rate %
Small and new	1,400	320	464	784	30
Small and experienced	1,400	320	438	758	28
Medium and new	3,540	798	506	1,304	16
Medium and Experienced	3,540	798	404	1,202	15
Large and new	7,080	1,594	576	2,170	13
Large and experienced	7,080	1,594	370	1,964	12

Source: Survey results from interviews in the Wad Medani, 1979.

TABLE 5. EFFECTIVE LOAN RATES PAID BY DIFFERENT TYPES OF BORROWERS FOR DIFFERENT PERIODS OF TIME

Type of Borrower	Effective Borrowing Costs in Percentage			
	Loan Repaid as Scheduled in 4 years	Loan Rescheduled for one More Year	Loan Rescheduled for Two Years	Loan Rescheduled for Three Years
Small New	30	24	18	18
Small Experienced	28	22	17	17
Medium-Sized New	16	14	13	12
Medium-Sized Experienced	15	13	12	12
Large and New	13	13	11	10
Large and Experienced	12	12	10	9

Source: Survey results from interviews in Wad Medani, 1979

future, even if loans are repaid on time. The irony of this is that lenders increase the incentives to default by being overly careful in extending loans and increasing borrower's loan transactions costs.

4. LENDING COSTS

With its cumbersome lending procedures the ABS is inadvertently transferring part of its normal loan transaction costs to at least some of its non-preferred borrowers. As a result, one might expect that ABS would have relatively low costs of transacting loans. A careful analysis of the actual costs of lending in two branches of the ABS showed this was not the case. In Table 6, cost information is presented for the Wad Medani Branch for representative years over the period 1965 to 1977. Using conservative assumptions, the accounting costs of lending for the branch ran from a low of 11 percent in 1968 to a high of 34 percent in 1965. The average accounting cost for the five years studied was 17 percent, almost double the roughly 9 percent that the ABS charged on most of its loans during this period. Similar figures for the Drilling Branch showed even higher accounting lending costs ranging from 19 percent in 1971 to 43 percent in 1974 (see Table 7).

When a realistic risk premium for loan default is added, a realistic cost of funds is applied to money lent, and an adjustment is made to reflect overall price changes in the economy, the real costs of lending are much higher. In the Wad Medani branch this rate was as high as 68 percent in 1971. An even higher rate of 84 percent was calculated for the Drilling Branch in 1974 (see Tables 6 and 7). Clearly, under any reasonable set of assumptions, it has been very costly for the ABS to extend loans. Likewise, it is very costly for most of the new borrowers seeking small

TABLE 6. ACCOUNTING AND TRUE LENDING COSTS FOR THE ABS, WAD MEDANI BRANCH, 1965-1977

Costs	1965	1971	1977
Total Branch Administrative Costs US$	12,568	24,455	55,540
Total Value of Loans US$	55,144	227,976	2,659,888
A.			
1. Branch Administrative Cost %	23	9	2
2. Headquarters Administrative Cost %	4	6	6
3. Risk Premium Allocation %	4	8	1
4. Actual Cost of Funds %	3	3	3
Accounting Lending Cost %	34	26	12
B.			
3a. Actual Default Rate %	11	22	10
4a. Opportunity Cost of Funds in % (Market Rate)	7	7	10
True Lending Cost in %	45	44	28
Price Change %	2	26	17
Total %	47%	70%	45%

Source: Unpublished records, Agricultural Bank of Sudan, Wad Medani Branch, 1965-77.

TABLE 7. ACCOUNTING AND TRUE LENDING COSTS FOR THE ABS, DRILLING BRANCH, 1971-1977

Costs	1971	1974	1977
Total Branch Administrative Cost US$	6,495	29,771	68,060
Total Branch Loans US $	350,352	117,059	740,860
A.			
1. Branch Administrative Costs %	2	25	9
2. Headquarters Administrative Costs %	6	8	7
3. Risk Premium Allocation %	8	7	1
4. Actual Cost of Funds %	3	3	3
Accounting Lending Cost %	19	43	20
B.			
3a. Actual Defaults %	22	18	10
4b. Market rate %	7	7	10
True Lending Cost %	37	58	36
Price Change %	2	26	17
Total %	39	84	53

Source: Unpublished records, Agricultural Bank of Sudan, Drilling Branch, 1971-1977.

loans to get formal loans. It is little wonder that many of the farmers in the Sudan find informal lenders, who impose very few loan transactions costs on their borrowers, more attractive to use than the official sources of credit.

5. CONCLUSIONS

It is useful to compare the joint transaction costs that lenders and borrowers incur in carrying out financial intermediation with the friction engineers worry about in engines. If an engine is poorly designed, badly balanced, or does not receive adequate lubrication, it will run with a good deal of friction and heat. The greater the friction, the less efficient the engine. The excessive transactions costs found in rural financial markets in countries such as the Sudan are a concrete indication of the amount of friction that exists in these systems and are also a concise measure of the efficiency with which the system is working. These costs are relatively easy to measure, and a diagnosis of their roots provides powerful insights into how to improve the overall efficiency of these markets. Traditionally, if policymakers wanted to know how well a credit program was working, they usually ask for measures of the impact of the program at the borrower level in terms of how many more modern inputs were used, and how much more product was produced. Credit impact is very difficult and extremely costly to measure in agriculture. It seems to us that policymakers would have more useful measures of how credit programs are working by looking at the costs these programs impose on participants in the intermediation process.

Why are the transactions costs for borrowers and lenders so high in the ABS? Unfortunately, there has not been enough careful work done on this

question in Sudan to provide firm answers. Research in other low income countries suggests some possible answers, however.

Clearly, the ABS is finding it difficult to sustain and expand its volume of lending to realize economies of scale. This is due to at least four major factors. First, government policies, plus the vagaries of nature, provide many farmers in the Sudan with low incomes, uncertain capacities to repay loans, and few highly profitable investment alternatives. This severely limits the volume of loans creditworthy farmers seek from the ABS. Second, poor loan recovery performance limits the amount of funds that ABS can recycle into new loans. Third, the very large negative spread between what ABS charges borrowers in terms of interest on loans, and what it costs ABS to provide these loans means that ABS continually must eat into its pool of loanable funds to cover its costs of operation. This, combined with inflation that generally exceeds ABS's nominal rate of interest on loans, means that the nominal and real value of its pool of loanable funds is substantially eroded each year. The ABS is far from being self sustaining and must constantly receive new funds from donors or the government to keep its doors open. In the broadest sense, the ABS is a retail outlet for outside funds, rather than being a self-sustaining financial intermediary. Fourth, ABS mobilizes few voluntary deposits. This means that it must always look for outside funds that usually carry cumbersome reporting requirements, or political strings. Both of these factors result in substantial increases in the operating costs of the ABS.

Why do many ABS borrowers incur large transactions costs? Any lender that has excess demand for concessionary priced funds will always try to

discourage non-preferred borrowers from asking for loans by requiring them to go through cumbersome steps. It is not in the interest of the lender to streamline procedures to reduce the non-preferred borrower's loan transaction costs. In fact, where possible, a rational lender will also shift many of its costs of effecting the loan to the non-preferred borrower. This will be especially true where the lender is on shaky financial ground and is experiencing hefty loan transaction costs. Without a large increase in the volume of funds available for lending, or a substantial increase in the rates of interest charged on loans so that loan prices discourage preferred borrowers from taking excessive amounts of loans, lenders such as ABS have little or no incentive to innovate and reduce the loan transaction costs they impose on non-preferred borrowers.

While loans cannot lead rural development, an efficient rural financial market can play an important role in supporting technological change, facilitating investments, allowing a more efficient allocation of resources in rural areas, and providing attractive savings alternatives for those with excess funds. A financial system, such as that found in the Sudan, that is severely repressed through rigid interest rate controls largely fails to perform these important functions, and also has an adverse impact on the distribution of income and assets. A repressed financial market does not offer attractive savings opportunities in rural areas, and this is much more detrimental to the poor than it is to the rich. Also, a repressed financial market ends up concentrating most of the concessionary priced loans in the hands of the non-poor. Those with low incomes who do get formal loans find that their borrowing costs associated with these

loans far exceed the effective borrowing costs of the rich, even though the nominal interest rates charged on the loans may be identical.

Interest rate policies in Sudan are a major factor causing the excessive transaction costs in financial markets, causing atrophy in the ABS, and resulting in very limited and very costly formal financial services for the rural poor. It will be very difficult for the ABS to become self-sustaining and to make larger contributions to agricultural development without major changes in current policies. We feel that reductions in transactions costs for both lenders and borrowers should be used as the principal indication of how well financial markets are working in the Sudan as well as elsewhere.

REFERENCES

Adams, Dale W and G. I. Nehman, "Borrowing Costs and the Demand for Rural Credit," The Journal of Development Studies, 15(1979):165-176.

Ahmed, Ahmed Humeida, "A Case Study of Agricultural Credit in the Gezira Scheme," M.S. thesis, University of Khartoum, 1975.

Ahmed, Ahmed Humeida, "Lending Behavior and the Recent Performance of Rural Financial Markets in the Sudan," Ph.D. dissertation, The Ohio State University, 1980.

Ahmed, Ahmed Humeida, "Agricultural Finance and Credit in the Sudan. Research Bulletin No. 33, Department of Rural Economy, Faculty of Agriculture, University of Khartoum, 1983.

Ahmed, S. El Medani, "The Integration of Agricultural Credit and Marketing in the Gezira Scheme of the Sudan with Special Reference to the Sheil System," Ph.D. dissertation, Wye College, University of London, 1977.

Ahmed, Zia Uddin, "Transactions Costs in Rural Financial Markets in Bangladesh: A Case of a Rural Credit Market," Ph.D. Dissertation, University of Virginia, 1982.

Awad, Mohamed H., "Problems in the Rural Areas: Controlling the Sheil," Sudanese Studies, 4(1973), in Arabic.

Babiker, Babiker Idris, "Small Farm Credit and Development in East Kordofan: Sudan," M.S. Thesis, University of Reading, 1971.

Cuevas, Carlos E. and Douglas H. Graham, "Agricultural Lending Costs in Honduras," in Undermining Rural Development with Cheap Credit, edited by Dale W Adams, Douglas H. Graham, and J. D. Von Pischke, Boulder, Colorado: Westview Press, 1984, pp. 96-103.

Due, Jean M., "A Note on Agricultural Credit in Sudan," Savings and Development, 4(1980):219-233.

Gonzalez-Vega, Claudio, "Credit-Rationing Behavior of Agricultural Lenders: The Iron Law of Interest Rate Restrictions," in Undermining Rural Development with Cheap Credit, edited by Dale W Adams, Douglas H. Graham, and J. D. Von Pischke, Boulder, Colorado: Westview Press, 1984, pp. 78-95.

Inter-American Development Bank, "Banco Agraria del Peru: Evaluation of Global Agricultural Credit Programs, unpublished report prepared by the Office of the Controller, Washington, D.C., June 1983.

Ladman, Jerry R., Loan-Transactions Costs, Credit Rationing, and Market Structure: The Case of Bolivia," in Undermining Rural Development with Cheap Credit, edited by Dale W Adams, Douglas H. Graham, and J. D. Von Pischke, Boulder, Colorado: Westview Press, 1984, pp. 104-119.

Moh., Izz El Din Siddig, "The Effect of Policies and Problems of Formal Finance on Production and Financial Performance of the Public Agricultural Corporations in the Sudan, 1970-1985. Unpublished M.S. thesis, Department of Rural Economy, Faculty of Agriculture, University of Khartoum, 1986.

Nyanin, Ohene Owusu, "Lending Costs, Institutional Viability and Agricultural Credit Strategies in Jamaica," Social and Economic Studies, 32(1983):103-133.

Pokharel, Bhola N., "An Evaluation of Lending to Informal Groups of Farmers in Nepal," M.S. thesis, Ohio State University, 1981.

Wilmington, Martin W., "Aspects of Moneylending in Northern Sudan," The Middle East Journal, 9(1955):139-144.